

## Buildings Technology Research and Development Subcommittee Meeting

July 16, 2009

Location: 950 L'Enfant Plaza DOE  
Time: 1:30-3:30 p.m.

### Attendees<sup>1</sup>

Shyam Sunder  
Jerry Dion  
Kevin Hurst  
Paul Domich  
Dru Crawley  
Alan Schroeder  
Sean McDonald  
Patrick Hughes  
Dale Manty  
Diana Bauer  
Larry Bank  
Kevin Kampschroer  
Bobbie Lippiatt  
Robert Chapman  
Ewa Lewandowski  
Bob Kollm (via telephone)  
Renee Tietjen  
Chris Smith  
Sarah Ryker  
John Taggart

### Agency/Office

DOC/NIST  
DOE/EE-Buildings  
EOP/OSTP  
DOC/NIST  
DOE/EE-Buildings  
DOE/EE-Buildings  
PNNL  
ORNL  
EPA  
EPA  
NSF  
GSA  
NIST  
NIST  
Smithsonian  
US Postal Service  
Architect of the Capitol  
Architect of the Capitol  
STPI  
STPI

BTRD Co-chair  
BTRD Co-chair  
BTRD Ex-Sec

**Next Meeting:** August 20, 2009, 1:30 - 3:30 PM, 950 L'Enfant Plaza DOE

August 20, 2009  
September 17, 2009

October 15, 2009  
November 19, 2009  
December 17, 2009

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<sup>1</sup> Active Members not attending identified in light gray

**Introductions:** Subcommittee Co-chair Shyam Sunder opened the Subcommittee for Buildings Technology Research and Development (BTRD) welcoming the agency representatives and thanking them for their participation. Participants provided self-introductions. Sarah Ryker and John Taggart from the Science and Technology Policy Institute (STPI) were welcomed to the Subcommittee as non-voting members and supporting the Office of Science and Technology Policy. Sarah Ryker was invited to provide an overview of STPI and current projects of interest to the Subcommittee.

**Review of Minutes:** Informal review of Minutes for June 18, 2009 was performed prior to the start of the meeting.

**The Science and Technology Policy Institute (STPI)** – Sarah Ryker provided a brief overview of STPI. STPI is one of three federally funded research and development centers run by the Institute for Defense Analyses – STPI assists the Executive Branch of the US government as it formulates federal S&T policy by providing analytic support to inform policymakers. Under STPI's Congressional charter, they support OSTP and can also work with all executive branch departments. Currently, STPI is researching a number of areas related to energy efficiency, including energy audit tools, workforce training, evaluation of building retrofit performance under the Weatherization Assistance Program, energy usage data and related data ownership and use issues, smart grid and real-time energy data.

For these studies, technical expertise is provided primarily by in-house staff with the assistance of a few energy consultants as needed in specialized areas. This input complements data from federal and state programs, telephone interviews, and economic and technical assessments. These resources help provide guidance to key issues and understanding of associated processes. STPI's energy-related activities draw on data sources including federal government, the private sector, and university programs (currently including the Carnegie Mellon Electricity Industry Center (CEIC)).

The energy data use issue pertains to how energy data coming from buildings and other demand sites is used, and who has access to the data. Given the potential for granular, frequently-collected energy-use data to fundamentally alter how the grid is operated and maintained, access issues will be of key concern to the stakeholder groups and the government at the federal, state and local levels. Processes for standardizing energy data transfer and stewardship may be needed as current local Smart Grid projects and utility codes are not coordinated across jurisdictional boundaries. Privacy issues will also impact energy-use data in that data users must ensure some level of anonymity.

STPI has also done some analysis of performance labeling for buildings including EPA/DOE Energy STAR, LEED, (see also, ASHRAE Energy Quotient). This is an area of future interest.

STPI also noted that OSTP is assisting with a Smart Grid workshop hosted by NIST. Members on the Subcommittee indicated interest and suggested that technical staff working on Smart Grid from their departments would welcome invitations to the workshop.

**Update on Policy Discussions for Building Technologies:** Shyam Sunder discussed options for the Subcommittee to pursue in advancing the policy study within the EOP. Sunder and Subcommittee Co-chair Jerry Dion will identify senior level individual(s) in the EOP and seek to engage them appropriately in priority areas of interest.

**Action Item:** Sunder and Dion will establish contact with EOP for building technology and policy briefings

**Water Infrastructure Workshop:** Dale Manty (EPA) offered a proposal to the Subcommittee on a proposed workshop investigating the diffusion of information related to water infrastructure improvements. While focusing on water infrastructure, the lessons learned can be extrapolated to energy, materials, and the other dimensions of high performing green buildings.

Effective innovations can take many years to spread throughout consumer, business, and policy audiences and markets. Empirical research about the diffusion of innovations in agriculture, education, science and technology, manufacturing, public health, management, and engineering have been applied to accelerate the rate and reach of effective innovation diffusion. The proposed workshop/ conference will consider both innovations in green water infrastructure and particular characteristics, challenges, and opportunities, as well as lessons from the diffusion of innovation paradigm that can be applied to stimulate the spread of new practices, programs, technologies, and policies in green water infrastructure.

Characteristics of a focused event are flexible, but a modest scale of 50-75 participants for 1½ days is envisioned, with plenary, panel and breakout sessions. The objective would be a consensus set of delineated research and development priorities. The key barriers would be identified along with possible strategies for overcoming these barriers, policies to promote technology diffusion, and gaps in current knowledge related to technology diffusion. Sunder suggested that EPA establish contact directly with agency members interested in participating in the workshop.

**Making Homes Part of the Climate Solution Policy: Options to Promote Energy Efficiency:** Marilyn Brown from Georgia Institute of Technology provided a presentation on policy options affecting the adoption of energy efficient technologies. The motivation this work includes:

- the large “energy efficiency gap” in residential markets, that has been difficult to narrow
- the need for a broad understanding of socio-economic aspects of energy consumption, including insights from behavioral research, that will allow the formulation of more informed strategies for improving energy efficiency and mitigating GHG emissions.
- to inform DOE, broadly, and the technology development and deployment strategies of the CCTP, about enabling informed consumer and business actions to save energy and reduce emissions
  - Is R&D the only lever to deliver the needed energy efficiency for addressing climate change?
  - How can we get more out of the current efforts?
  - Where are the remaining opportunities?

Workshops were held to identify key barriers and policy options. From these discussions, twelve options were assessed, resulting in seven options examined in this study. The policy options examined in this study included:

*Policy Options to Promote Energy Efficient Residential Construction*

1. Advancing and Enforcing State Building Energy Codes
2. Expanded Use of Home Energy Performance Ratings

*Policy Options to Promote Energy Efficient Improvements to Existing Residences*

3. Mandated Disclosure of Energy Performance Information
4. On-Bill Financing of Energy-Efficiency Improvements

*Utility-Based Policy Options to Promote Energy-Efficient Residential Buildings*

5. Performance Specifications for Smart Meters and Expanded Demand Response
6. Alignment of Utility Financial Incentives with Customer Energy Efficiency
7. Federal Energy Efficiency Portfolio Standard (EEPS)

A Scorecard Evaluation of each policy option includes a *Recommended Federal Action* and an evaluation of each option with respect to the Federal role, applicability, potential benefits, role of R&D, cost-effectiveness, administrative practicability, additionality (the characteristic to compliment other policies addressing similar or different barriers), and time to savings. These policies are expected to complement each other to achieve maximum savings, and enable and market transformation policies along with traditional financing and regulation options.

An aggregated summary of the recommended Federal Actions follows. For the *Scorecard Evaluations* of the recommended actions, please refer to the attached presentation.

Recommended Federal Actions:

- Expand technical assistance to States to accelerate their adoption of advanced building energy codes. Subject to available funds, provide financial assistance to establish and expand training and certification programs focused on third-party verification of building energy code compliance.
- Provide technical and financial assistance to States to develop policies that incorporate home energy performance ratings and ensure a qualified home energy performance rating workforce
- Require disclosure of home energy consumption or home energy performance at the point of sale or lease of a residential unit.
- Provide financial assistance to State Energy Offices to establish revolving loan funds to enable on-bill utility financing of energy-efficiency improvements without up-front capital costs to the building owner.
- Define performance specifications for “smart meters” that limit use of the label to devices with customer read-outs. Provide technical and financial assistance to States and utilities to provide for expanded demand response of residential electric loads through smart metering technologies and pricing schemes
- Ensure DOE’s strict enforcement of the 2009 American Recovery and Reinvestment Act requiring that disbursement of funds to States be contingent on Governor assurances that financial incentives will be established for utilities that help customers use energy more efficiently. Also, expand the federal Regulatory Assistance Program to help States design appropriate financial incentives for energy-efficiency programs.
- Promulgate rules such that electric and natural gas utilities are required to meet an energy efficiency resource standard (EERS); concurrently establish a national market for trading energy savings credits.

**Closure:** Sunder closed the meeting at 3:30 p.m. and thanked the agency representatives for their participation.